



Developing an GIS-based ECA calculator for forest disturbances

Zuozhu Meng (1) and Mingfang Zhang (1,2)

(1) School of Resources and Environment, University of Electronic Science and Technology of China, Chengdu, China (zuozhu_meng@163.com), (2) Center for Information Geoscience, University of Electronic Science and Technology of China, Chengdu, China (mingfangzhang@uestc.edu.cn)

Forest disturbance plays an important role in hydrologic process of large forested watersheds. In order to quantitatively estimate forest disturbances accumulating over time and space in a large watershed, an integrated indicator is necessary. Equivalent clear-cut area (ECA) that indicates the spatial pattern of disturbances and subsequent forest recovery processes is a better indicator than total disturbed area or forest cover rate. However, it is time-consuming and complicated to calculate ECA in a large watershed because of data collection and calculation over millions of harvested, burned, and infested forest stands. Thus, a GIS-based software named “CECA Computation and Assessment Tool” was developed to simplify ECA computing process, which can not only output calculated time-series of watershed-level ECA over a defined study, ECA spatial distribution, but also display spatiotemporal dynamic change of stand-level ECA. In general, this software is a useful tool for assessing forest disturbances at larger spatial scales, which will further benefit forest hydrologists to evaluate the effects of forest disturbances on hydrology.